

INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Algeria : Desert and Moroccan Locusts during March, 1929 (1).

Desert Locust (*Schistocerca gregaria*):— March 4 : A swarm at Hassi El Gara, 5 km. to the S. E. of El Goléa.

March 10 : A small swarm appeared in Oued ben Dib, Colomb-Béchar and flew towards the north.

March 20 : Some desert locusts from a swarm of the eastern Morocco alighted at Tlemcen and Sebdou.

Moroccan Locust (*Dociostaurus maroccanus*):— Hatching has taken place during March in the three Departments of Algeria on the breeding grounds noted in July and August, 1928.

DEPARTMENT OF ALGIERS. — Numerous hatchings have been reported from March 15 in the following Communes :— Aïn-Bessem Mixte, Aïn-Boucif Mixte, Aumale Mixte, Aumale P. E., Boghari M., Bouïra P. E., Bou Saâda Mixte, Chelala M., Djurdjura Mixte, Maillot Mixte and Sidi Aïssa.

DEPARTMENT OF COSTANTINE. — The following Communes have been infested with locusts since March 10 :— Aïn El Ksar Mixte, Aïn Touta Mixte, Aurès M., Barika M., Bélezma M., M'Sila, Les Bibans.

The invasion is still only at its beginning.

DEPARTMENT OF ORAN. — Hatching of Moroccan locusts has been observed from March 12 in the Communes of Berthelot P. E., Cacherou-Mixte, Frenda Mixte, Saïda, and Télagh.

The intensive use of cresyl solutions makes possible the destruction of large quantities of locusts at hatching. Burning on alfa and the use of "melhafas" also give satisfactory results. It is impossible to foresee the final result of the invasion which is still only in its early stages but is the most serious which has been recorded in Algeria for twenty years.

Uganda : Swarms of Locusts (*Schistocerca gregaria*) (2).

The occurrence in Uganda of numerous swarms of locusts (*Schistocerca gregaria*, Forsk.) has been recently recorded. The swarms are mainly in the drier areas of the northern and eastern parts of the country. No hoppers have yet been reported ;

* In this, as in the third chapter, the countries are arranged in French alphabetical order.

(1) Communication from the Governor General of Algeria to the President of the International Institute of Agriculture.

(2) Communication from the Director of Agriculture, Kampala, Uganda, official correspondent of the Institute.

the adults in most instances are of the pink immature type though latterly small numbers of drab or yellow adults have been noticed.

Enormous numbers of birds — Marabout Storks, Kites, Abdim's Storks, etc. — are feeding on the locusts.

Republic of Lebanon: Observations on the "Souné", *Eurygaster integriceps* (1).

The last invasion of this insect occurred five years ago.

In 1925-26 *Eurygaster integriceps* destroyed 70-80 % of the wheat crop. The Government of Lebanon was obliged, in order to check its ravages, to take measures such as planting early varieties of wheat imported from Iraq ("Kandahari", "Beidawi" and "Suidawi") and extending the cultivation of leguminous crops and barley. Control by means of insecticides, such as "Cyanogas", which has given satisfactory results, was also advocated.

But all these precautions are inadequate, in our opinion, to combat this troublesome pest. A phenomenon which remains as yet unexplained is that the attack diminishes in importance every year. In 1927 only 20 % of the wheat was attacked, in 1928 10 % and in 1929 hardly 5 % of the crop has suffered. We have endeavoured to discover whether the decrease is due to the presence of natural enemies of the insect, but have had no success in the matter.

According to information received from certain farmers *Eur. integriceps* invaded the wheat crops thirty years ago. The attack then lasted for about five years, like the last, and gradually decreased in intensity in a similar manner.

Southern Rhodesia: Remarks on Root-Disease and Collar-Rot of Citrus (2).

Two groves of citrus trees which had been gradually declining for some years were uprooted last year and opportunity was afforded of thoroughly examining the root systems of some 2000 diseased individuals.

Associated with the thin appearance of the aerial portion and chlorosis of leaves was more or less severe root disease and cracking of bark just above the bud union. The majority of affected roots were invaded by a *Rhizoctonia* which appears to be identical with a strain of *R. bataticola* (*Macrophomina phaseoli* (Maubl.) Ashby) originally reported by SMALL from *Grevillea robusta* in Uganda. Sclerotia, "sclerotial plates" and black crumbling bark were typically present and infection often penetrated through the entire length of a large lateral root into the crown of the tree proceeding as a solid cylinder of sclerotia-containing wood to the level of the bud-union. In such cases, "collar-rot" or cracking of bark was considerably advanced, and the exposed wood of the tree usually invaded by *Botryodiplodia theobromae*.

It is considered that the cause of bark disease is a deposition of gum in the meristematic tissues of the tree which kills the peripheral elements and causes a disintegration of tracheids and vessels. Pressure resulting from adsorption of water by this gummy deposit is probably also a factor in initiating the rupture. There seems to be little doubt that gumming is a direct result of root disease.

Other associated fungi have been found, but in the majority of trees examined

(1) Communication from the official correspondent to the Institute, Mr MAKHOUMI RAMIZ, Chief Engineer to the Ministry of Agriculture of the Republic of Lebanon at Beirut.

(2) Communication from the official correspondent to the Institute, Mr J. C. HOPKINS, Chief Botanist and Mycologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Rhizoctonia was present alone except in the most distant parts of the roots which were attacked by termites or otherwise disintegrating.

No soil or climatic condition could be found which might have contributed to the incidence of the disease and the groves are at present bearing a crop of maize which is expected to yield over 20 bags to the acre, no fertiliser having been applied for the past two years.

VARIOUS QUESTIONS

Convention between the Republic of Cuba and the United States of America for Investigation of the Natural Enemies of the Hemipteron *Aleurocanthus woglumi*.

On 5 November, 1928 a Convention was arranged between the Republic of Cuba and the United States of America for the collection and utilisation of the natural enemies of *Aleurocanthus woglumi* Ashby, commonly known as the "mosca prieta", in Cuba and "Citrus black fly" in the United States of America. This Hemipteron (fam. *Aleyrodidae*) is well known to be highly destructive of various plants and particularly of the citrus in Cuba and other islands of the West Indies, the Panama Canal Zone, Costa Rica and other areas in the Western World, but hitherto it has not been reported in the United States of America, though the risk of infestation is always present. It is a matter of common knowledge that in the East and specially in India there are powerful control agents of *A. woglumi* in the form of parasites, predators and cryptogamic diseases; hence as a result of this Convention the Department of Agriculture of the United States of America, through its Bureau of Entomology, has undertaken to supply the services of a specialist, who will visit the East for the purpose of collecting and breeding these natural enemies and of making arrangements for their transmission to Cuba and to certain other destinations. The Republic of Cuba will in its turn provide at the Agricultural Experiment Station at Santiago de las Vegas or some other suitable place all necessary facilities in the form either of a Field Station or a Laboratory for the reception and breeding or the propagation and distribution of the natural enemies of *A. woglumi* coming from the East. The Republic of Cuba will also arrange that the Entomologists of this Experiment Station shall give their assistance to a specialist belonging to the Department of Agriculture of the United States of America in the various branches of the work entailed by the scheme. So long as the Convention remains in force, all the expenditure involved in giving it practical effect will be met by the Republic of Cuba except that the United States of America Department of Agriculture will undertake to be responsible for the salaries of the two specialists.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Spain. — In accordance with the terms of the Royal Ordinance No. 925 of 18 April, 1929 the Stations of "Fitopatología agrícola" at Madrid, Barcelona, Valencia and Almería have been maintained in active service, whereas the other Stations and Observatories bearing the same title have been closed down.

The Stations that have been retained are responsible for the following: (a) the identification and the biological study of the agents of diseases and pests of cultivated plants; (b) the collection, study, acclimatisation and propagation of the natural enemies of the agents of diseases and of the plant pests; (c) the experimental work required for the determination of the power of resistance of pathological agents to the diversities of meteorological conditions and to the normal methods of treatment recommended for their control and the effects produced by these methods on plants; (d) the testing of the various means of checking or destroying plant pests and of the products or preparations prepared for trade purposes from the point of view of their real value and cost; (e) the discovery and study of new methods of protection and control of noxious agents; (f) the testing of apparatus used for applying insecticides and fungicides; (g) reports on the health conditions of crops and statistics of diseases of parasitic origin and the pests which affect the various native crops, as also of the plant diseases and pests affecting the different countries with which there is any trade in products which may convey germs or be carriers of pests dangerous for crops grown in Spain; (h) study of the results of the application of disinfection and purification processes to plant products (seeds, fruits, bulbs, rhizomes, tubers, roots, live plants, etc.) both as regards the destruction of disease-causing agents and plant pests and also as regards the commercial quality of the products so treated, their characteristics and properties in the matter of development, preservation and ultimate utilisation; (i) the determination of the methods which are considered, as the result of previous investigation, suitable for use in the treatment of plant diseases and pests and in the purification and disinfection of plant products; (j) the instructions to be given to foremen and workers for special control campaigns against plant pests; (k) the institution by the Madrid Station of short courses for intending agricultural engineers, who desire to specialize in the particular subjects which come within the purview of the Phytopathological Service.

The work of the Stations for Agricultural Entomology will deal with the following questions: (a) Entomology; (b) cryptogams and non-parasitic diseases; (c) statistics and reports on plant health conditions; (d) tests of chemical products and apparatus together with the effects of the various kinds of treatment.

The provincial agricultural Sections will undertake as their share in the Phytopathological Service: (a) the organization and direction of protection and control campaigns against plant pests in accordance with the processes, methods and prescriptions recommended by the superior authority; (b) the phytopathological inspection of crops, the results being communicated to the Phytopathological Station at Madrid to be used for the preparation of statistics; (c) the phytopathological inspection of warehouses, granaries, depots for storing and packing plant products for export to foreign countries and also the inspection of these products on the quay side or at the ports upon the request of the Ministry of National Economy; (d) the phytopathological inspection of plant products imported from abroad. (*Gaceta de Madrid*, Madrid, 21 abril 1929, año CCLXVIII, tomo II, núm. III, pags. 403 y 404).

* * * By Royal Ordinance No. 976 of 19 April, 1929 the importation of the following products is prohibited as from the 25th day of the month:—

(a) Fresh fruits of all kinds, saplings or plants, grafts, etc. of all fruit trees and mulberry trees coming from Japan, the United States of America, Canada and New Zealand, with the object of preventing the introduction into Spain of *Popillia japonica* ("escarabajo del Japón"), *Aonidiella perniciosus* = *Aspidiotus perniciosus* ("cochinilla de San José"), *Aleyrodes citri* and other species of the same genus, *Au-*

lacaspsis (*Diaspis*) *pentagona* ("cochinilla de la morera"), *Pseudomonas* (*Bacterium*) *Citri* ("chancro de los citrus"), *Bacillus amylovorus*, *Phyllosticta solitaria*.

(b) Unginned cotton coming from China, Japan, India, Egypt, Brazil, Mexico and the United States of America, with the object of protecting Spanish crops against *Anthonomus grandis* ("picudo del algodono") and *Pectinophora gossypiella* ("gusano rosado del algodono"). (*Gaceta de Madrid*, Madrid, 24 abril 1929, año CCLXVII, tomo II, núm. 14, págs. 464 y 465).

Italy. — By Ministerial Decree of 29 March, 1929 approval is given to the list of industrial occupations in which poisonous and infectious substances are employed or produced and the workers undergo periodical preventive medical inspection as prescribed in article 6 of the general regulations relating to Industrial Hygiene, as approved by the Royal Decree No. 530 of 14 April, 1927.

A number of substances used for the destruction of parasites harmful to agriculture are included in this list. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 24 aprile 1929, anno 70^o, n. 96, pp. 1811-1814).

* * * As a result of justifiable suspicion of the presence of grape phylloxera [*Phylloxera vastatrix*] in the Communes of Ancarani, Arsita, Basciano, Bisenti, Campli, Castel Castagna, Castello, Colonnella, Controguerra, Corropoli, Cortino, Crognaleto, Fanò Adriano, Isola del Gran Sasso d'Italia, Montorio al Vomano, Nereto, Pietracamela, Rocca Santa Maria, Roseto degli Abruzzi, S. Egidio alla Vibrata, Sant'Omero, Teramo, Torricella Sicura, Tortoreto, Tossicia, Valle Castellana in the province of Teramo, the provisions contained in articles 10-14 of the Regulations No. 1099 of 13 June, 1918 referring to the exportation of the materials specified in Nos. 1, 2, 3 and 4 of these Regulations have been made applicable to the areas of these Communes by Ministerial Decree of 31 March, 1929. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 10 aprile 1929, anno 70^o, n. 84, p. 1550).

* * * As a result of the ascertained presence of grape phylloxera, the same provisions have been made applicable to the Communes of Chiusi and Cetona, province of Siena, by Ministerial Decree of 18 April, 1929. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 27 aprile 1929, anno 70^o, n. 99, p. 1889).

* * * The "Ente Nazionale Serico" (National Silk Corporation), by arrangement with and assisted by the Agricultural Society of Lombardy, has arranged a Prize Competition, open to persons of Italian nationality, for the discovery of a method of prophylaxis or cure of the "mal del falchetto" (mulberry root rot) with the object of giving a special impulse to study and research work directed towards the determination of an effective remedy for this disease.

Mexico. — The "Secretaría de Hacienda y Crédito Público" has issued orders in the circular No. 21-(015) "28"/41 (I), dated 29 September, 1928, with regard to the observation by the customs officials of the directions of the "Ley de Plagas" of 15 November, 1924 and of the Regulations for veterinary and agricultural sanitary inspection.

With regard to the importation of plants, seeds and agricultural products, the Custom House shall notify the Official of the "Defensa Agrícola" of the arrival of species specified in article 39 of the Agricultural Sanitary Police Regulations in order that they may be submitted to the required inspection. If the results of the inspection are not favourable, the competent Official of the "Secretaría de Agricul-

tura y Fomento" shall decide whether the products in question shall be confiscated or destroyed or returned to their place of provenance.

A list is also given of the Custom Houses by which the importation of plants, plant parts or products which are not required to undergo special quarantine shall be allowed. (*Diario Oficial*, México, 9 de octubre de 1928, tomo I, núm. 31, págs. 1 a 3).

Peru. — The "resolución" of 9 November, 1928 declares the "resolución" of 31 March, 1922, prohibiting in general the importation of cotton seed into the Republic, to be permanent.

For the Central Station for Agricultural Research, and by its intermediary for the Experimental Stations, the importation may be permitted of a maximum of one kilogram of cotton seed, if accompanied by a certificate issued by the United States Department of Agriculture guaranteeing that it comes from a disease-free district.

The importation of sugar cane seed is governed by the regulations of the "resolución" of 5 June, 1925; such seeds may be submitted to the quarantine specified in the said "resolución" in the Quarantine Station at the Agricultural Experiment Station at Lima. (*El Peruano — Diario Oficial*, Lima, 28 de noviembre de 1928, año 86, tomo II, semestre II, n° 119, pág. 497).

Poland (1). — By a Decree of 31 July, 1928 the Ministry of Agriculture has ordered the destruction of the barberry (*Berberis vulgaris* L.) before 1st May 1929.

This regulation does not apply to barberry bushes in Botanic Gardens or in woods at a distance greater than 200 metres from the borders.

This Decree is applicable throughout the whole territory of the Republic except Silesia.

* * The Decree of 8 August, 1928 makes the destruction of the woolly aphid (*Eriosoma lanigerum*) compulsory.

The regulations of this Decree apply to all apple trees of any age and type, whether wild, ornamental, orchard trees, espaliers, bushes or dwarf bushes, as also to prunings, scions and all other parts of the tree except the fruit.

When the woolly aphid makes its appearance on the trees it shall be destroyed by one of the recognised methods of treatment, such as denatured alcohol, or by methods specified by the Institute for Plant Protection.

The planting in nurseries or in a permanent position of trees attacked by woolly aphid or showing traces of damage by woolly aphid, also the use of such trees for purposes of improvement, are prohibited.

Similarly the sale of such trees in any form is prohibited.

The sale of apple trees from nurseries in which woolly aphid made its appearance after 15 August is prohibited until after 15 August of the following year.

The Institute for Plant Protection may order the destruction within a given time of apple trees which are so seriously attacked by woolly aphid that control measures are rendered useless.

This Decree applies throughout the whole territory of the Republic excepting Silesia.

(1) Communication from the Ministry of Agriculture.

Greek Republic (1). — In order to prevent the introduction of the pink boll-worm of cotton [*Platyedra gossypiella*] into Thrace and Macedonia, which are at present thought to be free from this pest, by a Presidential Decree of 10 March 1928, the importation into the two regions of cotton seed and unginned cotton from any foreign country or any other part of the Republic is prohibited.

The importation of cotton seed from any country for sowing is also prohibited throughout Greek territory excepting in the cases indicated below.

Importers of cotton seed intended for industrial use or for stock feeding are required to present to the customs office at the place of entry a declaration to the effect that they undertake to use the seed exclusively for industrial purposes or for stock feeding and not for planting. Infringement renders persons liable to the penalties contained in the Law No. 214 of 9/12 April, 1914.

Importation into Thrace and Macedonia of cotton seed for planting from any foreign country or other part of the Republic may be permitted exceptionally to the Agricultural Scientific Institutes for purposes of varietal improvement. Before ordering such seed the Institute concerned shall, however, obtain in each case a special permit from the Ministry of Agriculture on which will be indicated the method of disinfection to which such seed from abroad or from other parts of the Republic shall be submitted. Importation of cotton seed from a foreign country is allowed only by the Custom House of the port of the Piraeus. The quantity of seed imported from any foreign country or transported from another part of the Republic may not in any one consignment exceed 10 kg. in weight.

The Decree of 20 January, 1928 prohibiting the importation and transport of cotton seed and unginned cotton has been abrogated.

Italian Somaliland. — By Decree No. 7226 of the Governor, dated 8 January, 1929, the introduction of seeds of American cotton and sugar cane cuttings into the Colony is prohibited.

Seeds, plants and plant parts to which the above regulation does not apply which are intended for purposes of reproduction, vegetative or by seed, may be introduced only with the permission of the Government and by the ports of Mogadiscio, Merca, and Chisimaio. Seeds, plants and plant parts must in all cases be accompanied by certificates, etc., stating their provenance and declaring them to have received thorough disinfection by authorised Government Institutes. When the Government considers it necessary seeds, plants and plant parts requiring a permit of entry into the Colony shall be disinfected at a specified place at the expense of the persons concerned. The Government has the right at any time to order the destruction of prohibited seeds, plants and their parts.

Sowing of cotton is permitted only in the season of the "gu", i. e., April to June.

The cultivation of cotton on the same ground in two consecutive years is prohibited.

Cotton field refuse, such as stems, roots, leaves, empty bolls and any other remains of the previous crop, shall be burnt by the grower. In cases of negligence this work shall be officially carried out at the defaulter's expense. The latest date for burning such refuse is fixed as 28 February. The plants shall be pulled up and gathered into heaps or rows at least 15 days before the above date in order to allow them to dry and the unopened bolls to ripen.

(1) Communication from the official correspondent to the Institute, Mr A. AYDONTANTIS, Head of the Phytopathological Research Section attached to the Ministry of Agriculture at Athens.

In cases of necessity the Government has absolute authority to order the total or partial destruction of crops, even before picking, and within a given time. Similarly the Government may, without any right of appeal, when necessary or when growers have neglected disinfection, order the seed to be burnt at the ginning factory. Producers of seed intended for planting shall inform the Government Agricultural Bureau of the quantity of seed harvested and the place of storage and shall offer a sample of seed for inspection. The Bureau has absolute authority to judge whether or not the seed is suitable for such use and to order its being put to other use or destroyed. Seed intended for the preparation of oil may be subjected to inspection by experts when the Government considers it necessary.

At the same time or immediately after the burning of the old cotton plants the following compulsory actions shall be taken:—(a) the thorough cleaning of the ground from weeds; (b) deep ploughing; (c) the destruction of any wild Malvaceae.

Any infringement of these regulations will be punishable by a fine of from 100 to 5000 liras or 1 to 30 days' imprisonment. More serious offences or repetition of an offence will make the offender liable to imprisonment with a fine.

Incorporated in the Decree are "Norme pratiche per gli agricoltori" (Practical instructions for farmers) including:—(a) advice concerning the planting of cotton, recommending as early sowing as possible in order to avoid the serious attacks of pests which occur after the rains of "der"; also the destruction of such wild Malvaceae as *Pavonia* spp. (called by the natives "balambal"), *Thespesia* *Danis* ("cobhanne" or "cobon") and *Abutilon* spp. to facilitate the destruction of numerous cotton pests which they harbour; (b) the disinfection of cotton seed produced in the Colony and intended for planting by exposing it to the sun from February to April on galvanised iron plates; (c) the destruction of the caterpillars of the pink bollworm [*Platyedra gossypiella*] by children in the fields and stores; (d) the hand-picking of pests, which is a specially effective and convenient means of controlling the cotton stainer ("cimice rossa", *Dysdercus cardinalis*) and the beetle *Syagrus rugiceps*; it is less easily carried out with the red cotton bollworm ("verme rosso delle capsule", *Diparopsis castanea*), the spiny cotton bollworm ("bruco spinoso", *Earias insulana*) and *Argyroploce wahlbergiana* ("tortrice" of the castor-oil plant); (e) the cutting down and destruction of sugar cane attacked by *Sesamia calamistis*; (f) the use of various insecticides against *S. rugiceps*, *Antigasta catalaunalis* ("piralide" or "tignola" of the sesame), the corn ear worm ("eliotide", *Heliothis obsoleta*), the "pidocchi" or "pulcioni" (plant-lice or fleas) of cotton and beans, the scale insects of the banana (*Pseudococcus*), coconut and custard apple, white ants, grasshoppers, etc.; (g) the planting of trap crops, such as, maize between the rows of cotton bushes as a lure for the caterpillars of *H. obsoleta*, sugar cane for *S. calamistis*, and tñ (*Hibiscus cannabinus*) and bamia (*H. esculentus*) for *D. cardinalis*. (*Bollettino ufficiale della Somalia Italiana*, Mogadiscio, 10 gennaio 1929, anno XIX, Supplemento al n. 12, pp. 241-243).

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[*Rosellinia aquila*].

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[*Omphalia (Stilbella) flavida*].

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[Under the name of "gallina ciega" are known in Guatemala some insect larvae specially those belonging to the family *Scarabaeidae*; the most widely known are those of the genus *Melolontha*].

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[*L. riccae* has been taken on the leaves and fruit of the olive].

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[*Mauginiella Scaetiae* Cavares causes the disease of *Phoenix dactylifera* commonly known as "Khamedj" (rot), "Doud" or "Doudah". The disease is now endemic throughout North Africa from Cyrenaica to Morocco].

CHAIINE, EDOUARD. L'action catalytique des bouillies cupriques. *Le Progrès Agricole et Viticole*, Montpellier, 1929, 46^e année, n° 16, p. 380-385.

CHIAROMONTE, A. Missione entomologica Chiaromonte in Eritrea (novembre-dicembre 1926). Nota preliminare su una nuova specie di *Pseudantonina* dannosa all'Agave sisalana nella Colonia Eritrea. *Pseudantonina Agaves*, n. sp. *L'Agricoltura Coloniale*, Firenze, 1929, anno XXIII, n. 2, pp. 61-67, tav. II.

CIFERRI, RAFAEL, y GONZÁLEZ FRAGOSO, ROMUALDO. Hongos parásitos y sa-
profitos de la República Dominicana (15° serie). *Boletín de la Real Sociedad Española de Historia Natural*, Madrid, 1928, tomo XXVIII, núm. 4, págs. 221 a 228, fig. 1.

[Describes 9 new species and 1 new form including: *Zukalia Chrysophylli* Frag. et Cif., on the living leaves of *Chrysophyllum* sp.; *Systromma Cinnamomei* Frag. et Cif., on the living leaves of *Cinnamomum Camphora*; *Hendersonia Nectandrae* Frag. et Cif., on the living leaves of *Nectandra coriacea*].

CONSIGLIO NAZIONALE DELLE RICERCHE. Istituti e Laboratori scientifici italiani. Notizie illustrative a cura del Segretario generale. Prima edizione. Bologna, Nicola Zanichelli, MCMXXVIII, VIII + 957 pp.

[Includes also information about the Institutions and Laboratories which are occupied in study and research in connection with plant protection].

CONTE, VINCENZO. Contributo alla conoscenza della grillotalpa (*Gryllotalpa gryllotalpa* L.). *Bollettino del Laboratorio di Zoologia generale e agraria* del R. Istituto

superiore agrario di Portici, Spoleto, 1929, vol. XXI, pp. 275-301, figg. I-VIII. Bibliografia, pp. 298-301.

COTTON, A. D. A fungus disease of Meconopsis. *The Gardeners' Chronicle*, London, 1929, Third Series, Vol. LXXXV, No. 2200, pp. 143-144.
[*Pezonospora arborescens* on *Meconopsis* spp. in Great Britain].

DA COSTA LIMA, A. Sobre o caruncho do café. *Archivos da Escola Superior de Agricultura e Medicina Veterinaria*, Rio de Janeiro, 1928, vol. IX, ns. 1 e 2, pags. 3-49, fig. 1.

[Reprints of works published in 1924 and 1925, dealing with the records of *Stephanoderes hampei* in Brazil, its classification, geographical distribution, life history, etc.].

DAMPF, ALFONSO. La campaña contra la catarinita de la papa (*Leptinotarsa decemlineata*), en Europa. *Boletín de la Oficina para la Defensa Agrícola* [de México], San Jacinto, D. F., 1928, año II, tomo II, núms. 10 y 11, págs. 664 a 673.

DAMPF, ALFONSO. No existe en México el « mal de Panamá » del platano. *Boletín de la Oficina para la Defensa Agrícola* [de México], San Jacinto, D. F., 1928, año II, tomo II, núms. 10 y 11, págs. 638 a 642, 1 fig.
[*Fusarium cubense*].

DE LA BARREDA, LEOPOLDO. Formulario de los fungicidas, insecticidas y venenos más comunes que se usan para el combate de las plagas agrícolas. *Boletín de la Oficina para la Defensa Agrícola* [de México], San Jacinto, D. F., 1928, año II, tomo II, núm. 12, págs. 746 a 761, 1 fig.

D'EMMERÉZ DE CHARMOY, D. Opuntia Tuna. *La Revue Agricole de l'Ile Maurice*, Maurice, 1928, n° 42, p. 264-267.

[Account of the beneficial action of *Dactylopius indicus* in the destruction of *Opuntia monacantha* and of *Dactyl. tomentosus* against *O. Tuna* in Mauritius].

DUFRENOY, J. Etude cytologique des rapports entre parasite et cellule-végétale. *Annales de l'Institut Pasteur*, Paris, 1929, t. XLIII, n° 2, p. 218-222, fig. 1-5.
[Observations on *Arisaema triphyllum* attacked by *Uromyces Caladii*].

DUFRENOY, J. Le *Phomopsis citri* Fawcett. *Annales de Cryptogamie exotique*, Paris, 1928, tome I, fasc. 4, p. 349-352, 1 pl.

DUFRENOY, JEAN. Introduction à l'étude cytologique des plantes affectées par des maladies à virus. *Annales des Epiphyties*, Paris, 1928, 14^e année, n° 2, p. 163-174, fig. 1, pl. I-VII.

ELLIOTT, CHARLOTTE, and SMITH, ERWIN F. A bacterial stripe disease of sorghum. *Journal of Agricultural Research*, Washington, D. C., 1929, Vol. 38, No. 1, pp. 1-22, pls. 1-9. Literature cited, pp. 21-22.
[*Bacterium Andropogoni* E. F. Smith on *Holcus Sorghum* L.].

FAES, H. La lutte contre les chenilles fileuses ou chenilles d'Hyponomeutes. *Annuaire agricole de la Suisse*, Berne, 1928, 29^e année, p. 520-533, fig. 1-11.

FAES, H. Un contre-parasite du puceron lanigère, l'*Apelinus mali*. *Annuaire agricole de la Suisse*, Berne, 1928, 29^e année, p. 515-519, fig. 1-2.

FARSKY, O. Einige Bemerkungen über das Verhältnis gewisser Vogelarten zu den kranken Nonnen- und Kieferneulenraupen. *Lesnická Práce*, Písku 1929, ročník VIII, číslo 3, str. 168-182, obr. č. 1-2.

[In Czech, with title and summary also in German.

Liparis (*Lymantria*) *monacha*, *Noctua* (*Panolis*) *piniperda*].

FELIPPONE, F. Contribution à la flore mycologique de l'Uruguay. *Annales de Cryptogamie exotique*, Paris, 1928, tome I, fasc. 4, p. 338-348, pl. VIII.

[A list of all the species recorded up-to-date].

FORESTRY COMMISSION. The Dutch elm disease (*Graphium ulmi* Schwarz). Leaflet No. 19, London, 1928, 6 pp., 4 figs.

FORESTRY COMMISSION. The watermark disease of the cricket bat willow. Leaflet No. 20, London, 1928, 6 pp., 3 figs.

[*Bacterium Salicis* Day on *Salix coerulea* Smith].

FRAPPA, C. Sur un ennemi du caféier à Madagascar (Le bostriche du caféier). *L'Agronomie Coloniale*, Paris, 1929, 18^e année, n° 133, p. 14-20.

[*Xyleborus coffeae* Wurm].

FULTON, HARRY R., and COBLENTZ, W. W. The fungicidal action of ultra-violet radiation. *Journal of Agricultural Research*, Washington, 1929, Vol. 38, No. 3, pp. 159-168, pls. 1-3.

[Preliminary experiments on disinfecting the surface of citrus fruits in order to reduce or retard the development of rot, specially that produced by *Penicillium digitatum*].

GABOTTO, L. Gli insetti nocivi alle principali piante legnose coltivate. (Biblioteca Agricola). Torino, G. B. Paravia & C., 1929, VIII + 100 pp., 40 figg.

GABOTTO, L. La peronospora del frumento. *Curiamo le Pianta! e La Difesa delle Pianta contro le Malattie ed i Parassiti*, Alba, 1928, anno V e XXIII, n. 7, pp. 125-126, 1 fig.

[*Sclerospora macrospora*].

GABOTTO, L. L'oidio e lo zolfo. *Giornale Vinicolo Italiano*, Casale Monferrato, 1928, anno 54^o, n. 30, pp. 354-355.

[*Oidium Tuckeri*].

GADD, C. H. A new view of the causation of Diplodia disease. *The Tea Quarterly*, Colombo, 1928, Vol. I, Pt. 4, pp. 89-93, pls. VIII-IX.

[*Botryodiplodia Theobromae*].

GADD, C. H., and BERTUS, L. S. Corticium vagum B. and C. — The cause of a disease of *Vigna oligosperma* and other plants in Ceylon. *Ceylon Journal of Science. Section A. — Botany (Annals of the Royal Botanic Gardens, Peradeniya)*, Colombo, 1928, Vol. XI, Pt. 1, pp. 27-49, pls. VI-IX.

GARD, M. Sur les causes de l'infécondité des noyers et de la vigne en 1926. *Annales des Epiphyties*, Paris, 1928, 14^e année, n° 2, p. 132-162, fig. 1-9.

GIBSON, ARTHUR. Fighting the insects. *The Civil Service Review*, Ottawa, 1929, Vol. I, No. 4, pp. 282-287, 5 figs.

[Describes the organisation and activities of the Entomological Service in Canada].

GOLA, G. Il mal del gozzo nei peschi. *Il Gazzettino Agricolo*, Padova, 1928, anno VI, n. 44, p. 2.

[*Bacterium tumefaciens*, in the province of Padua].

GONZÁLEZ, DELFIN. Cómo obtener éxito en el tratamiento de las enfermedades de los árboles. *Agronomía*, Santiago de Chile, 1928, año XVIII, n° 1, págs. 17 a 20, 1 fig.

GRAF M., ALBERTO. El cuarto Congreso Internacional de Entomología. *Agronomía*, Santiago de Chile, 1928, año XVIII, n° 1, págs. 21 a 26; 1929, año XIX, núm. 1 y 2, págs. 21 a 27, 1 fig.

GRASSÉ, PIERRE-P. Endémies et plantes sauvages. *Le Progrès Agricole et Viticole* Montpellier, 1928, 45^e année, n° 40, p. 541-544.

[The caterpillars of *Polychrosis botrana* feed on numerous wild plants besides the vine. The insect shows a particular liking for *Daphne Gnidium*. The A. recom

mends eradicating *Daphne* from the vicinity of vineyards until it has been proved, by planting *D. Gnidium* in thick rows for the purpose, that it particularly attracts *Pol. botrana*].

HAHMANN, C. Auftreten und Bekämpfung von japanischen Heuschrecken und Tausendfüßern im Gewächshaus. *Der Blumen- und Pflanzenbau*, Berlin 1929, 44. Jahrg., Heft 4, S. 61-63, 2 Abb.

[*Tachycines asynamorus* Adel., *Polydesmus complanatus* L.].

HALLOCK, HAROLD C. North American predacious insects attacking Japanese beetle grubs (*Popillia japonica* Newmar). (Coleop.: Scarabaeidae, Carabidae; Dipt.: Tabanidae, Therevidae, Asilidae). *Entomological News*, Philadelphia, Pa., 1929, Vol. XL, No. 3, pp. 76-78.

[*Harpalus pennsylvanicus* De G., *Tabanus costalis* Wied., *Psilocephala haemorrhoidalis* Macq., *Erax aestuans* Linn., *Ommatius marginellus* Fab.].

HEMMI, TAKEWO, and ENDO, SHIGERU. On a staining method for testing the viability of sclerotia of fungi. *Memoirs of the College of Agriculture, Kyoto Imperial University*, Kyoto, Japan, 1928, No. 7, pp. 39-49, pl. V.

HEMMI, TAKEWO, and YOKOGI, KUNIOMI. Experimental studies on the pathogenicity of certain fungi on rice seedlings. *Memoirs of the College of Agriculture, Kyoto Imperial University*, Kyoto, Japan, 1928, No. 7, pp. 1-22, fig. 1, pls. I-II. Literature cited, pp. 20-21.

[*Piricularia Oryzae*, *Helminthosporium Oryzae*, *Hypochnus Sasakii*, *Hyp. centrifugus*, *Sclerotium Oryzae-sativae*, *Sclerotium* sp.].

HERING, MARTIN. Die Blattminierer-Gattung *Pelmatopus* Htg. (Hym. Tenth.). *Zeitschrift für wissenschaftliche Insektenbiologie*, Berlin 1929, Bd. XXIV, Nr. 1/3, S. 97-107, Fig. 1-12.

HERNANDEZ TORREZ, OSCAR. El «chamusco» de los frijoles. Su causa, daños y tratamiento. *Revista de Agricultura, Comercio y Trabajo*, Habana, Cuba, 1928, año XI, vol. 10, núm. 5, pág. 20.

[*Empoasca mali*].

HOPE y HOPE, PABLO. Experimento sobre el uso del carbonato de cobre para proteger el maíz. *Boletín de la Oficina para la Defensa Agrícola*, [de México], San Jacinto, D. F., 1928, año II, tomo II, núms. 10 y 11, págs. 642 a 648.

JACK, RUPERT W. Notes from the Entomological Laboratory. Trap cropping against maize pests. *The Rhodesia Agricultural Journal*, Salisbury, Rhodesia, 1928, Vol. XXV, No. 11, pp. 1228-1231.

[*Glottula fusca*, *Systates*, *Tanymecus*].

JOHNSTON, C. O., and MELCHERS, L. E. Greenhouse studies on the relation of age of wheat plants to infection by *Puccinia triticina*. *Journal of Agricultural Research*, Washington, 1929, Vol. 38, No. 3, pp. 147-157, pls. 1-3.

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[*Aplanobacter insidiosum* L. McC.].

KENNEDY, CLARENCE HAMILTON. Evolutionary level in relation to geographic, seasonal and diurnal distribution of insects. *Ecology*, Brooklyn, N. Y., 1928, Vol. IX, No. 4, pp. 367-379, charts I-V.

KORFF, G., und ZATTLER, F. Die Peronosporakrankheit des Hopfens. (Arbeiten aus der Bayer. Landesanstalt für Pflanzenbau und Pflanzenschutz. Herausgegeben von Ministerialrat G. Christmann, München. Heft 5). Freising-München [1928], 42 S., 7 Abb., 1 farb. Taf.

[Contains: Vorwort. Von G. K o r f f. — Die Peronosporakrankheit des Hopfens [*Pseudoperonospora Humuli*]. Von F. Z a t t l e r. — Die Bayer. Landesorganisation für Pflanzenschutz im Hopfenbau und ihre praktische Auswirkung im Jahre 1927. Von G. K o r f f. — Die Bekämpfung der Peronosporakrankheit des Hopfens und die erzielten Erfolge in Bayern im Jahre 1927. Von F. Z a t t l e r. — Die Untersuchungs- und Auskunftstätigkeit des Hopfenforschungsstelle im Jahre 1927. Von F. Z a t t l e r].

KUIJPER, J., JOCHEMS, S. C. J., DE GROOT, M., VAN DER MEER MOHR, J. C., DE JONG, J. K., ROWAAN, P. A. Tubaroot (*Derris elliptica*) as a remedy against tobacco-lice (*Myzus persicae*) in Deli. *Mededeelingen van het Deli Proefstation te Medan-Sumatra*, Medan [1928], tweede serie, no. LVIII, blz. 3-61, fig. 1-4. Gebruikte literatuur, blz. 59-61.

[In Dutch, with title and summary also in English. Contains: —

I. Introduction (J. K u i j p e r). — II. Botanical description and culture of tuba (S. C. J. J o c h e m s). — III. Manufacture of tubaroot-extract (M. d e G r o o t). — IV. Control of the poisonous properties of tubaroot-extract by the biological method (J. C. v a n d e r M e e r M o h r). — V. The effect of tuba on tobacco aphid (*Myzus persicae*); also in comparison with that of nicotine (J. K. d e J o n g). — VI. The effect of tuba on caterpillars (J. C. v a n d e r M e e r M o h r). — VII. Review of the chemical investigations (P. A. R o w a a n)].

KULKARNI, G. S., and MUNDKUR, B. B. Studies in the wilt disease of cotton in the Bombay Karnatak. Series I. *Memoirs of the Department of Agriculture in India, Botanical Series*, Calcutta, 1928, Vol. XVII, No. 2, pp. 7-27, pls. I-IV.

[This paper deals with the wilt disease of cotton, a disease associated with the presence of a fungus morphologically indistinguishable from *Fusarium vasinfectum* Atk.

It consists of the following chapters:

I. Introduction, by Harold H. M a n n, D.Sc. — II. The parasitism of the *Fusarium* associated with the wilt disease of cotton, by G. S. K u l k a r n i, M.Ag. — III. The pathogeny of wilting in cotton plants, by G. S. K u l k a r n i, M.Ag., and B. B. M u n d k u r, M.A.].

LANZA, MIRANDA. Lo svernamento della peronospora dello spinacio. *Bollettino del Laboratorio Sperimentale e R. Osservatorio Regionale di Fitopatologia*, Torino, 1929, anno 6^o, n. 2, pp. 7-9.

[*Peronospora Spinaciae*].

LUDWIG, DANIEL. Development of cold hardiness in the larva of the Japanese beetle (*Popilla japonica* Newm.). *Ecology*, Brooklyn, N. Y., 1928, Vol. IX, No. 3, pp. 303-306, fig. 1.

LUDWIGS, K. Kupferkalk- oder Schwefelkalkbrücke? *Der Obst- und Gemusebau*, Berlin 1929, 75. Jahrg., Heft 4, S. 61-63.

MALENOTTI, ETTORE. L'Afelino del melo nel Veneto. *Il Coltivatore*, Casale Monferrato, 1928, anno 74, n. 31, pp. 391-393.

[*Aphelinus mali*].

MARANI, M., DOTTI, F., e CIRIO, L. Osservazioni intorno ai danni prodotti dal gelo nella provincia di Ravenna. *L'Italia Agricola*, Piacenza, 1929, anno 66^o, n. 3, pp. 144-156, figg. 1-16.

[Observations made particularly on the peach, apricot, pear, plum and vine].

MATTIROLO, ORESTE. Le « Scuole Ambulanti » nella propaganda parassitica e agricola. *Annali della R. Accademia d'Agricoltura di Torino*, Torino, 1929, vol. LXXI (1928), pp. 143-145.

[Describes the practical advantages of the so-called "Escuelas rodantes" established in Cuba, consisting of motors specially equipped to help in diffusing the

principal methods of controlling plant diseases. The A. considers that the adoption of this system of propaganda would result in a considerable saving of time also for the experts of the "Cattedre ambulanti d'Agricoltura"].

MEILHAN, J. Sur la vanesse du chardon (*Pyrameis cardui* L.) parasite de l'artichaut. *Revue de Zoologie agricole et appliquée*, Bordeaux, 1928, 27^e année, n° 11, p. 165-175, fig. 39, pl. VI.

MENCACCI, MARIO. Nuove esperienze sulla disinfezione della castagne da esportazione. *Bollettino della R. Stazione di Patologia vegetale* [di Roma], Firenze, 1928, anno VIII, nuova ser., n. 4, pp. 417-427.

[*Laspeyresia* (*Carpocapsa*) *splendana*, *Balaninus elephas*].

MÉTALNIKOV, S., et CHORINE, V. Maladies microbiennes chez les pyrales de maïs (*Pyrausta nubilalis* Hübn.). *Annales de l'Institut Pasteur*, Paris, 1928, t. XLII, n° 12, p. 1634-1660, fig. 1-7.

[*Coccobacillus Ellingeri* n. sp., *Vibrio Leonardi* n. sp., *Bacterium Pyraustae* n° 1, n° 2, n° 3, n° 4, n° 5, n° 6, n° 7].

METCALF, C. L., and FLINT, W. P. Destructive and useful insects. Their habits and control. First edition. New York-London, McGraw-Hill Book Company, Inc., 1928, xii+918 pp., 561 figs.

[Includes the following chapters :—

I. Insects as enemies of man. II. The value of insects to man. III. The external morphology of insects. IV. The internal anatomy and physiology of insects. V. The mouth parts of insects. VI. Development and metamorphosis. VII. The place of insects in the animal kingdom. VIII. The orders of insects. IX. Insect control. X. Apparatus for applying insecticides. XI. Insects injurious to corn. XII. Insects injurious to small grains and forage grasses. XIII. Insects injurious to legumes. XIV. Cotton insects. XV. Tobacco insects. XIV. Insects injurious to vegetable gardens and truck crops. XVII. Insects injurious to deciduous fruits and bush fruits. XVIII. Citrus insects. XIX. Insects attacking shade trees and shrubs. XX. Greenhouse insects. XXI. Household insects and pests of stored grains, seeds, and cereal products. XXII. Insects injurious to domestic animals. XXIII. Insects that attack and annoy man and affect his health].

MOKRZECKI, ZYGMUNT. Report of the Institute of Forest Protection and Entomology, Skierniewice, Poland, 1924-1927. Lwów 1928, 61 pp., 7 figs.

[In Polish, with title and summary also in English].

MORALES FRAILE, ELADIO. Trabajos realizados en la Estación de Fitopatología Agrícola de Valladolid por el Ingeniero Agrónomo del Servicio Fitopatológico. ——. Septiembre-diciembre 1928. Madrid, Imprenta y Encuadernación Martín Treceño, [1928], 7 págs.

[A list of insects and cryptogamic parasites observed on various cultivated plants].

MORSTATT, H. Die jährliche Ernteverluste durch Pflanzenkrankheiten und Schädlinge und ihre statistische Ermittlung. *Berichte über Landwirtschaft*, Berlin 1929, N. F., Bd. IX, Heft 4, S. 433-477, 1 Abb.

[A full discussion of the question with numerous bibliographical references].

NARASIMHAN, M. J. Progress and organization of spraying against Supari Kole-roga (*Phytophthora arecae*). *The Journal of the Mysore Agricultural and Experimental Union*, Bangalore City, 1928, Vol. IX, No. 1, pp. 1-7.

NECHLEBA, A. Natürlicher Schutz von Scolytiden-Bruten gegen Raubinsekten. *Anzeiger für Schädlingskunde*, Berlin 1929, V. Jahrg., Heft 2, S. 25-26.

NORDMANN. Unkrautbekämpfung auf Wegen und freien Plätzen. *Der Blumen- und Pflanzenbau*, Berlin 1929, 44. Jahrg., Heft 4, S. 71-72.

OORTWIJN BOTJES, J. G. Zwartbeenigheid van de aardappelplant. *Tijdschrift over Plantenziekten*, Wageningen, 1928, vier en dertigste Jaarg., 3^e afev., blz. 91-105. [*Bacillus atrosepcticus* Van Hall].

PAILLOT, A., et PUSSARD, R. Sur l'emploi en agriculture du sulfocyanure de cuivre. *Comptes rendus des séances de l'Académie d'Agriculture de France*, Paris, 1929, tome XV, n° 12, p. 501-504.

[Successful experiments on the control of *Plasmopara viticola*, *Venturia pirina* and *Exoascus deformans*].

PASSALACQUA, T. La galerucella dell'olmo. « Galerucella luteola » Mull. *Curiamo le Piante ! e La Difesa delle Piante contro le Malattie ed i Parassiti*, Alba, 1928, anno V e XXIII, n. 10, pp. 189-192, 1 fig.

[PATOULLARD, N., et HEIM, ROGER]. IV. Champignons recueillis par M. Mayeul Grisol dans le haut Orénoque. Travaux postumes de N. Patouillard réunis par Roger Heim. *Annales de Cryptogamie exotique*, Paris, 1928, tome I, fasc. 3, p. 266-278, fig. 1-2.

PELAGHIAS, CH. G. Investigations into the locust plague in Cyprus. *The Cyprus Agricultural Journal*, Nicosia, Cyprus, 1929, Vol. XXIV, Pt. 1, pp. 10-20.

PETRI, L. Di un nuovo metodo di cura del « mal dell'inchiostro » del castagno. *Bollettino della R. Stazione di Patologia vegetale* [di Roma], Firenze, 1928, anno VIII, nuova ser., n. 4, pp. 339-356, figg. 1-4.

[Deals with the "Gandolfo method" for the control of *Blepharospora cambivora*, which consists in removing the soil to expose the trunk of the chestnut tree at the base to the first large roots].

POISSON, RAYMOND. Sur la présence dans le midi de la France d'un Hémiptère-Homoptère américain de la famille des Membracidae: *Ceresa bubalus* Fab., et sur sa biologie. *Comptes rendus hebdomadaires des séances de l'Académie des Sciences*, Paris, 1929, tome 188, n° 8, p. 572-573.

[*C. bubalus*, which has been observed in the vicinity of Banyuls, Eastern Pyrenees, is an insect capable of damaging various cultivated plants, such as the apple, potato, etc.].

PUSSARD, R. Contribution à l'étude morphologique et biologique de la teigne du lilas (*Gracilaria syringella* Fab.). *Annales des Epiphyties*, Paris, 1928, 14^e année, n° 2, p. 107-131, fig. 1-8. Bibliographie, p. 130-131.

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[*Bacterium Betle* n. sp. on *Piper Belle*. An English diagnosis of the new species is given].

RAMAKRISHNA AYYAR, T. V. A contribution to our knowledge of the Thysanoptera of India. *Memoirs of the Department of Agriculture in India, Entomological Series*, Calcutta, 1928, Vol. X, No. 7, pp. 217-316, figs. 1-33, pls. XXXII-XXXIII.

[Describes also 3 genera and 21 species new to science].